



# **The Livable Landscape Project: By chance or by choice**

## ***Teacher's Guide for Classroom Instruction (Middle School and High School)***



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## Introduction

### *Message from the Producer*

Sprawl. It's hard to define, but you know it when you see it. Sprawl is new homes in fields where cows once grazed and in woods where wildlife once roamed. Sprawl is Walgreens and Rite Aids and Shop 'n Save at the edge of town where parking is plentiful and sewer lines are not. Sprawl is to blame for the loss of vitality in our cities and town centers, it is the primary culprit for air pollution, non-point source runoff, and habitat loss. It is responsible for northern New England becoming more like everywhere else and less like the place we're proud of being from.

Yet sprawl is us. It's a collective pattern of land use created by individuals, by towns, and by states. It is caused by people craving bigger houses, larger yards, less congestion, and by consumers seeking convenience and cost-savings. It is caused by builders and developers trying to satisfy a need in the easiest, most profitable, way. Sprawl is a rational response to growth in a society that lacks a vision for its future and its relation to its cultural and physical landscape.

How do we begin to shape that vision, and take the steps necessary to make it a reality as we begin the 21st century?

Melissa Paly  
Cross Current Productions

### *About the Video*

The Livable Landscapes Project is a one-hour documentary that explores the changing relationship between people and the land in Maine, New Hampshire and Vermont. With simultaneous broadcast on public television stations throughout the region in January 2003, the program is intended to catalyze a region-wide discussion and challenge people to take part in shaping the future of northern New England.

The Livable Landscapes Project is a collection of stories about people who are making choices about how their communities grow and change. From urban downtowns to village centers and working lands, there are hopeful things happening: a Seacoast farmer's struggle to survive in one of the fastest growing parts of the region; a revitalized Main Street in Littleton New Hampshire; farmers in Shoreham Vermont who are secure enough about an agricultural future that they reinvest in their farms. There are towns in southern and mid-coast Maine coming to terms with Route 1, while people around Burlington Vermont debate the benefits, and impacts, of a new highway. There are developers trying to create new neighborhoods, there are citizen groups and statewide forums that are feeling an urgency to grow smart before there is no landscape, and no sense of place, left to save.

The Livable Landscapes Project places current changes in an historical context, exploring how the region's shift away from a resource-based economy has impacted communities

and the landscape. It presents scenarios for the region's future based on current growth patterns, and reveals the power that people can wield in defining that future.

The Livable Landscapes Project is a production of Cross Current Productions in collaboration with New Hampshire Public Television and the Society for the Protection of New Hampshire Forests, in association with ITVS, with funding provided by the Corporation for Public Broadcasting.

### *Instructions for Using This Guide*

This guide is designed to allow middle school and high school teachers to utilize the Livable Landscapes Project in classroom teaching. Seven interdisciplinary lesson plans have been developed covering topics ranging from geography and citizenship to ecology and economics. Based in environmental education theory, this curriculum sets out to:

1. Foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;
2. Provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;
3. Create new patterns of behavior of individuals, groups and society as a whole towards the environment<sup>1</sup>.

For each unit there is a primary hands-on activity, with a number of interdisciplinary extensions. Each main activity builds on the previous activities, moving from historical analysis to current assessment to creating and implementing a vision for the future. After participating in this program, students will have a greater understanding of their local landscape environmentally, culturally and socially. In addition, students will explore their role in the changing landscape and the responsibilities of active citizenship. Although the examples of this documentary are based on case studies in Northern New England, the lesson plans and activities have been designed to be applicable throughout the United States.

#### Unit 1: Reading History in the Landscape

Beginning with defining *landscape* and *community*, this unit takes students back into time. Viewing landscape issues through a historical lens, students will assess how humans have altered their surroundings over time. The activity helps train students to observe and read the clues and remnants of the past in the modern landscape of their community. Extensions involve the collection of personal narratives and research into local art and literature.

#### Unit 2: Where Are We Going?

Based on the case study of Stratham, New Hampshire, students investigate how zoning laws influence land-use patterns. Students will map out their present day community, and investigate how current development patterns and zoning policies could change their

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<sup>1</sup> These goals are based on the United Nation's Tbilisi Declaration of 1978, widely considered to be one of the founding documents of environmental education.

local landscape. Extensions involve identifying environmental, social and cultural assets that might be threatened by future change and creating a more detailed portrait of their community.

### Unit 3: Food for Thought

Returning to working landscapes in New England, this section of the video profiles the struggles and successes of small-scale farms. Students will keep a log of food consumed in a single day, and trace back each ingredient to its origin. They will then search for alternative sources of the same food closer to home. Extensions involve a detailed survey of local resources and a proposal for a school garden.

### Unit 4: Defining Downtown

In this unit students will investigate the behavior of community members and the patterns of local consumption. Using the example of Littleton, New Hampshire, students will analyze the existence and use of a downtown section of their community versus outlying areas. A detailed log will be kept of personal and community consumption patterns, and students will investigate the impact of these patterns on the local economy and environment. Extensions involve writing about the character of the community and designing a statue or monument that embodies this character.

### Unit 5: To Build or Not to Build

In every community, people are faced with new developments that may conflict with environmental integrity and community values. By exploring the controversy over the construction of the "Circ" in Burlington, Vermont, students will be introduced to the economic tool of cost-benefit analysis. Students will identify the pros and cons of a hypothetical development in their community, and brainstorm alternatives. Extensions involve a class role-playing session and an analysis of family commuting patterns.

### Unit 6: By Chance or by Choice

Scarborough, Maine's Dunstan Village is a new type of environmentally and socially responsible development, an example of smart growth. This activity's discussion of smart growth builds on all of the previous activities students have undertaken: an analysis of a community history, an assessment of community assets and behavior patterns, and a detailed cost-benefit analysis of new development. Drawing from the previous lessons, students will design their ideal community and create a set of guidelines for development. Extensions involve three-dimensional modeling and creating a composite map of their combined visions.

### Unit 7: Now Do It!

In the final unit of this curriculum, students build the skills required to become community activists. Based on the results of the previous lessons, students have the information and vision required to influence future development patterns in their community. This lesson includes a series of actions students can take to become more engaged in their community. Students are encouraged to develop their own campaigns and organizations to protect and improve their community's landscape.

## Unit 1: Reading History in the Landscape

*At a glance:* Beginning with defining *landscape* and *community*, this unit takes students back into time. Viewing landscape issues through a historical lens, students will assess how humans have altered their surroundings over time. The activity helps train students to observe and read the clues and remnants of the past in the modern landscape of their community. Extensions involve the collection of personal narratives and research into local art and literature.

*Subjects covered:* history, geography, anthropology, literature and art

*Grade level:* 6—12

*Time requirements:* 3 50-minute classes with additional time for student research

*Standards:* See appendix

*Learning objectives:*

Students will:

Investigate natural and human-induced landscape change over time.

Understand where and when their community began and what its early industries were.

Explain the connection between natural landscape and their community's history.

Investigate primary sources of research.

Gather and record personal narratives of older residents of their community.

Explore representations of their community in art and literature.

*Documentary segment:*

*Program summary:* The landscape of New England, like that of other regions around the United States, is changing. In this opening section of the Livable Landscapes Project, a diverse group of scholars and activists describe sprawl and some of its causes. The population of the United States is not only growing, but it is also spreading out, creating an ever-larger footprint on the natural world. In addition, the unique character that has historically defined New England towns is being drowned in a sea of national, large-scale retail stores (the "big boxes"). To investigate the alleged decline of our communities, students must first define their community, and explore its past.

*Main ideas and themes:* History as a tool to understanding the present; humans as an agent of change in the natural environment; the connection between human economy and physical landscape.

*Vocabulary:*

Community

Landscape

Oral history

Primary sources

Secondary sources

Sprawl

*Class Discussion:*

Questions to ask before viewing:

How do you define the word community? Is your school a community? Is your neighborhood a community? What does it take to make a community?

Questions to ask after viewing:

Do you think sprawl exists in your community? In what ways has your community changed while you have lived there? Do more people live there? Are there more stores and shopping areas? Do these impact your community positively or negatively? In what ways?

*Activity: Community Timeline*

In the first section of the Livable Landscapes Project, scholars and activists from around New England describe the changing landscape over time, a history that followed the stages of traditional use by American Indian groups, settlement by Europeans, resource exploitation and deforestation, urban migration, reforestation and sprawl. In this activity students will explore the history of their local community and create a detailed timeline.

Materials

1. VCR, TV, videotape of Livable Landscapes Project
2. Computers with internet access
3. Library access
4. Posterboard (10 pieces)
5. Polaroid or digital camera (optional)

What to Do

1. As a class, have your students find out about the beginnings of your community (whether it be a town, city, suburb or rural area). Encourage your students to come up with their own definition of what they consider to be the "origins" of a human community: Students can discuss if they think that a community begins at town incorporation, European settlement, or human use by indigenous peoples. Based on a consensus decision, choose a time period within which your students will explore their community (This activity works best if the historic time period to be examined ranges between 50 and 300 years in length). If the students reside in various towns or cities within a geographic region, have students research the community in which the school is located.
2. Divide the community's history, from the beginning of the community to present day, into ten equal sections (for example, a 100-year-old community would have 10 sections, each 10 years long). Divide the class into ten groups, and assign each group to research a different segment of their community's history.
3. Each student group will research its time period guided by the following questions: How big was the community's population during your time period? How much land area did the community cover? What did people do for a living? What did people wear? What did they eat? What did they do for fun? In what kind of buildings did they live and work? How did they get around? Who lived in the community and where did they come from? Were there farms? If so, where did they exist and what did they grow? Was there any undeveloped wilderness in or near your community? What important or interesting events happened in this time period? Who were the leaders, heroes and celebrities in the community? To answer these and other questions, students should use secondary sources, such as books on local history and archived local newspapers. In addition, you should encourage students to investigate primary sources, by conducting interviews with people who lived through their

- assigned time period, reviewing personal writings (diaries and letters) and undertaking a visual analysis of photographs and paintings.
4. Each team will create a poster for their time period. Along the top students should draw a timeline that lists major events that took place during their period. The posters should also include important facts such as population, land area, economy, and so on. If any buildings or monuments exist from the time period, students should include Polaroid or digital photographs of these structures on the posters. In addition, any old photographs and newspaper clippings will make the posters more interesting.
  5. Find a space in the school (such as a hallway, classroom wall, library display area) where you can hang all ten posters chronologically. As each group hangs its poster, have group members give a brief presentation on their time period. After the presentation, lead a discussion on things that have changed and things that have stayed the same over time. In particular, look at how buildings and the environment have changed. Ask students which information source proved to be most valuable.

#### *Extension 1: Living History*

Some students may have interviewed family members or neighbors to learn about their community in the previous activity. Have each student interview a member of the community who is at least fifty years old and who has lived in the community for most of his or her life. These interviews will provide students with personal narratives, or oral histories, of community residents. In this form of research, used by cultural anthropologists, people recount memories and stories from their past with minimal interruption from the researcher. Students should ask informational questions (such as, "How long have you lived in the neighborhood?"), as well as impressionistic questions (such as, "How has the neighborhood changed?"). Have the students write a short essay on their community's past, based on a story they learned about during the interview. (Personal narratives are also used by filmmakers, such as the producer of the Livable Landscapes Project. If students have access to tape recorders or video cameras, encourage them to record the interviews and make their own documentary.)

#### *Extension 2: Reading the Landscape*

In the "Community Timeline" activity, students may have found that the present, including existing objects such as old buildings or monuments, holds clues to the past. In this extension, students will explore the stories that are hidden in the landscape. Have the students investigate the story behind the name of their street, a nearby body of water and their neighborhood or subdivision, and write a short essay on this topic. Many such names are connected to the natural or social history of a place. Some names may be disconnected or arbitrary; if that is the case, encourage students to create a more appropriate name and write about it.

#### *Extension 3: Local Stories*

A lot can be learned about a community by looking at more than just the facts. In this extension, have students explore the representation of their community or region in works of art and literature. First students should visit local museums, art galleries, bookstores and libraries looking for works by local artists and writers. Then each student should choose a different work, and write a short essay about the artist and his or her perception of the community.



*Resources:*

Books

The Great Remembering: Further thoughts on land, soul, and society

Peter Forbes

The Trust for Public Land, 2001

Hands on the Land: A History of the Vermont Landscape

Jan Albers

MIT Press and Orton Family Foundation, 2000

Websites

"Community History: Better Schools Building Better Communities," Program for Rural Services and Research, University of Alabama

[http://www.pacers.org/community\\_history.htm](http://www.pacers.org/community_history.htm)

"Community History in Words and Pictures," County of Los Angeles Public Library

<http://www.colapublib.org/history/>

"How to Collect Oral Histories," Utah State University

[http://www.usu.edu/oralhist/oh\\_howto.html](http://www.usu.edu/oralhist/oh_howto.html)

"Local Place Names Reach back into History," American Press

<http://www.americanpress.com/features/docs/history/places.htm>

"Origins of Local Place Names," Eyewitness in Manchester UK

<http://www.manchesteronline.co.uk/ewm/newsletter/ewm405.html>

"Rural Locality Names," Taminmin Community Library, Australia

<http://www.octa4.net.au/tamlib/library/places.htm>

*Activity sheets:* None

## Unit 2: Where Are We Going?

*At a glance:* Based on the case study of Stratham, New Hampshire, students investigate how zoning laws influence land-use patterns. Students will map out their present day community, and investigate how current development patterns and zoning policies could change their local landscape. Extensions involve identifying environmental, social and cultural assets that might be threatened by future change and creating a more detailed portrait of their community.

*Subjects covered:* social studies, geography, mathematics, and creative writing

*Grade level:* 7–12

*Time requirements:* 3 50-minute classes with additional time for student research

*Standards:* See appendix

*Learning objectives:*

Students will:

Understand the environmental, social and cultural factors that define a landscape.

Examine zoning policies and development patterns that threaten landscapes.

Identify unique and endangered resources and plan for the protection of those resources.

*Documentary segment:*

*Program summary:* John Hutton is perhaps the most endangered farmer in the New Hampshire Seacoast. He owns a small piece of land around the farmhouse and barns that his grandfather built. Last year, the 150 acres that abuts Hutton's farm, land he has leased for years, sold for millions of dollars. Once rolling fields and woodlands, this land is now being converted into the “Millionaires” golf course, pitting high-income newcomers against old-time residents. Hutton had to sell his heifers and ewes, and put his acreage into pumpkins that he sells at farm stands around the Seacoast. As chairperson of the Stratham Planning Board, he is working to pass an aggressive cluster subdivision ordinance that promotes higher densities of development in exchange for greater amounts of open space preservation. By an overwhelming majority, the town also recently approved a \$5 million bond issue for the purchase of open space. Will the measure be enough to accommodate both the pressures of growth and the survival of a farm?

*Main ideas and themes:* Loss of cropland and pasture to development; citizen involvement in public policy actions to protect open space and conserve land; various assets that define a landscape.

*Vocabulary:*

Build-out analysis

Cluster development

Conservation easement

Open space

Working landscapes

Zoning

*Class Discussion:*

Questions to ask before viewing:

Are there any farms in or near your community? If so, what do they grow and/or raise? Did there used to be more or fewer farms in your area? Did there used to be farms on the land where you live? Does your family ever buy food from a local farm stand or farmers market? If so, why does your family shop at that stand or market?

Questions to ask after viewing:

What happened to the land Hutton was farming? Should Hutton give up on farming and try something else? How can cluster development help farmers such as Hutton? What are "conservation easements," and how can they help farmers? Which is more environmentally friendly: a working landscape, such as a farm, or a golf course? Why? What about a farm that is subdivided into many large lots, each featuring large, expensive homes, but with most of the land retained in its natural state? Why does sprawl put increased pressure on local services and increase property taxes? What should be done with the \$5 million dollars that has been set aside to protect open space in Stratham?

#### *Activity:* The Landscape Zone

Building on the historical change identified in the previous activity, students will project current growth trends into the future to see in what direction their community is heading. This activity begins with a discussion of zoning laws, and involves creating a large map of the community. Students will hypothesize about the effects of future developments on their community.

#### Materials

1. VCR, TV, videotape of Livable Landscapes Project
2. Computers with internet access
3. Library access
4. Street map of community
5. Large (4'-by-5') piece of paper for map
6. 4'-by-5' piece of transparent plastic
7. Rulers
8. Colored pencils and markers
9. Calculators
10. Overhead projector (optional)

#### What to Do

1. Lead a discussion on zoning laws. Most communities have planning boards that have delineated land use areas, separating spaces for commercial development from residential areas. The first zoning laws, established in the 1800s, were designed to separate low-income apartments from polluting factories, based on concerns of human health risks. Currently, efforts to build environmentally friendly multi-use neighborhoods are challenged by prohibitive zoning laws. Ask your students if they have noticed the outcomes of zoning laws within their community. Are there any shopping centers in the middle of their neighborhoods? Do they see any homes right next to the grocery store or mall? Can they figure out where the line is that separates residential and commercial areas? Have students brainstorm about the benefits and drawbacks of zoning.

2. You will need a detailed street map of your community and a 4'-by-5' piece of paper. Divide the street map into nine sections, and draw nine similar sections on the piece of paper. Divide the class into nine teams, each team responsible for transferring all of the information from each section on the small map to the same section of the larger map. Have the students measure the length of one side of their section on the small map, and the equivalent length of the side of the section on the large piece of paper. The ratio of these lengths can be used to draw roads while maintaining the relative scale. Students should also note where main roads cross the edge of their section, and connect these end points. Have the students calculate the new scale by multiplying the scale of the original map by the ratio of the new map section length to the original map section length. (Note: If you have access to an overhead projector, this step can be carried out in a simpler and more precise manner. Place a transparent plastic sheet over the street map, and trace all the roads onto the transparency. Tape the sheet off paper to a wall, and use the overhead projector to display the streets onto their larger paper, adjusting the projector so the street map fills the paper. Have students trace the projected roads onto the paper and compute the scale as above.)
3. Ask students if the street map would tell a stranger much about their community. Does it show where houses and stores are located? Does it say anything about the different neighborhoods? Discuss with students whether maps paint a complete picture of an area. For example, a street map may be helpful and provide you with all the pertinent information if you are driving, but it may leave out bicycle or hiking trails. Ask the students what other information would be useful on a map.
4. On the map, have students identify the different land uses in their community, including agriculture, high-density residential areas, low-density residential areas, commercial shopping areas, office buildings, civic institutions, public parks, and undeveloped land. Using colored pencils, students should shade each land use with a different color. Students may be able to fill in the land uses from memory or they may have to, individually or as groups, visit the different sites before completing the map. Students should make sure to mark on the map underdeveloped areas (such as vacant lots) that are located in the midst of developed areas.
5. Contact your City Hall or local planning office to obtain a copy of the local zoning regulations and maps. Read through some of the regulations with the students, and ask them if they understand the legal language. (Note: Your community may not have a formal zoning plan map, or you may not be able to obtain a copy. If that is the case, skip ahead to step 8.)
6. Place the 4'-by-5' piece of transparent plastic over the large map created in step 2. Convert the zoning plan map to the same scale as the large community map. Then, using the same method as before, have students mark out the different land-use areas on the transparency as described by the zoning plan. (Note: If you do not have a large transparency, a second map could be created on paper and then compared to the first).
7. Have the class compare the current land uses with the allowable land uses according to the zoning map. This process is called a build-out analysis, and is used by planners to predict landscape change. Are all of the residential zones full of homes? Are any of the current land uses different from the zoning regulation (which may be the case if the zoning regulation has changed since the property was purchased)?

8. Using the population data collected in the previous lesson, have students calculate the growth rate of the community. If the population is growing, have students identify places on the map where new homes could be built. How will these new homes change the neighborhood? What additional services will the new homes and their residents require?
9. If developers decided to construct a large shopping center in your community, have students decide where the new development could be built. How would this change the neighborhood? How would this affect other shopping areas? How would this affect traffic?
10. Have students think up other situations, allowable by zoning regulations, which would change their community's landscape.
11. Have students add more detail to the map. They should fill in any landmarks and special places that were not listed in the original street map. Make sure your school and all of your students' homes are added to the map. For use in later lessons, put the map on one wall in your classroom.

#### *Extension 1: Endangered Assets*

Students may be familiar with the term "endangered species," which refers to organisms that are in immediate danger of becoming extinct, often as a result of human activity. Lead the students in a discussion of other assets that may be endangered. For example, in the video, Hutton claims that his farm is the most endangered in the area, and the town members identify open space as an endangered asset. Assets can also be social or cultural: People may gather informally or formally in your community, from groups that play basketball on public courts, to outdoor concerts at a downtown park. Museums and art galleries can be considered cultural assets of a community. By comparing current development and allowable development according to zoning regulations, and considering growth rates, have the students identify an endangered asset in their neighborhood. Each student should write a description of the problem and a list of possible solutions.

#### *Extension 2: Ode to My Home*

Have students will write about their community, focusing on the unique qualities that make it special. For this assignment students may write an essay, short fictional story, poem or song. Set aside class time for your students to share their stories, perhaps creating a coffeehouse atmosphere (for example, by dimming the lights, playing background music, having snacks, and so on) for the poetry and short-story readings.

#### *Resources:*

##### Books

[The Small Town Planning Handbook](#)

Thomas L. Daniels, John W. Keller and Mark B. Lapping  
Planners Press, American Planning Association, 1995

[Suburban Nation: The Rise of Sprawl and the Decline of the American Dream](#)

Andres Duany, Elizabeth Plater-Zyberk and Jeff Speck  
North Point Press, 2000

#### Websites

American Planning Association

<http://www.planning.org/>

"Cyberbia: The Urban Planning Portal," University at Buffalo, Department of Urban and Regional Planning

<http://www.cyberbia.org/index.html>

"Land Use Law," Professor Daniel R. Mandelker, Washington University School of Law

<http://www.landuselaw.edu/>

*Activity sheets:* none

### Unit 3: Food for Thought

*At a glance:* Returning to working landscapes in New England, this section of the video profiles the struggles and successes of small-scale farms. Students will keep a log of food consumed in a single day, and trace back each ingredient to its origin. They will then search for alternative sources of the same food closer to home. Extensions involve a detailed survey of local resources and a proposal for a school garden.

*Subjects covered:* environmental science, agriculture, geography and economics

*Grade level:* 7–12

*Time requirements:* 3 50-minute classes with additional time for student research

*Standards:* See appendix

*Documentary segment:*

*Program summary:* Shoreham, Vermont is a long way from what you'd call sprawling, in part thanks to the conservation easements that protect more than 20 percent of the land in town from development. Through these easements, farmers have sold land development rights to the state, made some money in the process, lowered the value of their property (which is a benefit for tax purposes), and ensured that agriculture will remain the “highest and best use” of the land. But conserving land is only one part of preserving an agricultural economy. As much as farmers need farms, they also need markets. This segment introduces farmers who sell their products primarily to the local market. For farmers, the local produce stand allows them to have more control over their production and results in more stable income. This segment also highlights community supported agriculture (CSA), and describes how CSA closes the food production and consumption loop, and tightens the relationship between people and the land.

*Main ideas and themes:* Farmland can be preserved using policy tools such as conservation easements; the need for local markets to support agriculture; using CSAs to close the food production and consumption loop.

*Learning objectives:*

Students will:

Investigate the origin of the food they consume.

Search for food alternatives available from local sources.

Complete an ecological and natural resource survey of their community.

*Vocabulary:*

Community supported agriculture

Composting

Markets

Organic farming

Pesticides

*Class Discussion:*

Questions to ask before viewing:

Have you ever visited a farm? Where and when? Do think the life of a farmer is easy or hard? Have you ever thought about becoming a farmer? Why or why not? What is organic farming?

Questions to ask after viewing:

How do you think the farmers in the video could get more people to buy local apples and milk? Can you think of ways that the farmers could work together instead of competing with one another? How does community supported agriculture work? Why are people willing to spend more on fresh, organic fruits and vegetables bought at a local market or directly from the farmer? If farmers wanted to increase production and profits they could increase their yields by using chemicals and expand their market by selling to a non-local grocery chain; why would farmers choose to keep the business small, organic and local?

*Activity:* Back to the Farm

Large grocery stores and supermarkets have contributed to our increasing detachment from the sources of our food. Meats, fruits and vegetables may travel thousands of miles from the farm to our dinner table. Packaged and processed foods often combine ingredients from around the globe. In this activity, students will keep a log of all food consumed in one day, research the origin of the food and investigate local alternatives.

Materials

1. VCR, TV, videotape of Livable Landscapes Project
2. Computers with internet access
3. Library access
4. Clipboards (one per student)
5. Activity Sheet 1: Food Log (one per student)

What to Do

1. Introduce the activity by asking students what they ate (or will eat) for lunch that day. Ask them if they know where the food was purchased, where it was grown, and where it was processed. Hand out one "Food Log" and one clipboard to each student. Tell the students that, over the next day, they should record in the log all of the food they eat. For any home-cooked meals, they should list all of the ingredients. For any processed foods, they should write down all of the ingredients listed on the package.
2. In the second column of Activity Sheet 1, students will list where the items were purchased. They may need to talk to parents, family members and roommates to find out where they shopped. For the third column, students will need to research the origin of the food. This will require contacting stores and manufacturers, and searching websites.
3. In class, have students share what they found. Did any of the food originate in your community, state or region? Within the class, what is the longest distance that students found food products had traveled? What foods originated in different countries?
4. Have your students make two columns on a sheet of paper. In the left-hand column have them write the list of food from the log. In the right-hand column they should fill in local substitutes. Students may need to visit the organic or locally produced section of their grocery store, a local farm stand, or contact a local farmer or farmers association. If certain items are not grown in your region, see if students can find



- another locally produced food to use as a substitute (for example, if bananas are not grown in your region, look for other fruits, such as oranges or apples).
5. Using the information collected on locally produced food, have the students design a menu for a restaurant that only serves local food. Would they be able to order their favorite food at this restaurant?

#### *Extension 1: Natural Resource Survey*

(Note: This activity is based on "Backyard Bioblitz" in the World Wildlife Fund's Biodiversity Basics Curriculum.)

Investigating local food production is one way of studying the natural resources of your area. But food production is only one aspect of the natural resource base, and is often dependent upon other natural characteristics, such as climate and physical landscape. To improve their knowledge of local natural assets, and explore the use of non-local resources, have your students complete a profile of local ecology, resources and environmental issues. Students should find the answers to the following questions:

- Where does your drinking water come from?
- Where does your electrical power come from and how is it produced?
- What major habitat type do you live in?
- What is the closest body of water to your school?
- Name three native trees that grow in your region.
- Name ten native animals that live in your region.
- What species in your area, if any, are threatened or endangered?
- What is the average temperature in July? In December?
- How long is the growing season in your community?
- What fruits and vegetables grow well in your climate?
- Where does your solid waste go?
- Where does your sewage/wastewater go?
- Where does your recycling go?
- Are there any toxic waste or Superfund clean up sites in your community? (To find out, students can visit <[www.epa.gov/superfund](http://www.epa.gov/superfund)>.)

#### *Extension 2: School Garden*

Have your class design a garden for your school. If possible, see if a local farmer or master gardener would be willing to help design and plant the garden. Combining this person's expertise with your students' research on local agriculture, have the students decide which plants should be grown on a small plot in your schoolyard, or in plant boxes on a school balcony or roof. Have students create a list of inputs required for the garden (for example, seeds, compost, and a sprinkler) and the respective prices of these inputs. Students should also investigate the possibility of setting up a compost pile for organic waste from the cafeteria. If feasible, the on-site compost pile could provide rich, natural fertilizer to the students' garden. In addition, have the class brainstorm different subjects that could be taught in the garden (such as biology, mathematics, or economics) and uses for the vegetables produced. Have your class put all of this information into a final proposal, and present it to your school's administration.

*Resources:*

Books

Fast Food Nation: The Dark Side of the All-American Meal

Eric Schlosser

HarperCollins, 2002

Gaia's Garden: A Guide to Home-Scale Permaculture

Toby Hemenway

Chelsea Green Pub Co., 2001

Local Flavors: Cooking and Eating from America's Farmers' Markets

Deborah Madison

Broadway Books, 2002

Silent Spring

Rachel Carson

Mariner Books Reprint, 1994 (1962)

*Websites*

"Community Supported Agriculture (CSA)," Alternative Farming Systems

Information Center, US Department of Agriculture

<http://www.nal.usda.gov/afsic/csa/>

"Community Supported Agriculture of North America," University of Massachusetts Extension

<http://www.umass.edu/umext/csa/>

Organic Trade Association

<http://www.ota.com/>

OrganicGardening.com

<http://www.organicgardening.com/>

"Ten Reasons to Buy Local Food," Appalachian Sustainable Agriculture Project

<http://www.asapconnections.org/local.htm>

Wisconsin Foodshed Research Project

<http://www.foodshed.wisc.edu/>

*Activity sheets:* Activity Sheet 1

## Unit 4: Defining Downtown

*At a glance:* In this unit students will investigate the behavior of community members and the patterns of local consumption. Using the example of Littleton, New Hampshire, students will analyze the existence and use of a downtown section of their community versus outlying areas. A detailed log will be kept of personal and community consumption patterns, and students will investigate the impact of these patterns on the local economy and environment. Extensions involve writing about the character of the community and designing a statue or monument that embodies this character.

*Subjects covered:* social studies, geography, economics, mathematics, literature and design

*Grade level:* 7–12

*Time requirements:* 2 50-minute classes with additional time for student research

*Standards:* See appendix

*Learning objectives:*

Students will:

Determine if their community is organized around a traditional downtown

Document the consumption patterns of their community

Investigate the impact on the local economy of consumption patterns

*Documentary segment:*

*Program summary:* A few years ago, Littleton, New Hampshire's Main Street looked a lot like many other post-industrial towns in northern New England: The mills along the river had long-since closed, the shoe companies had left town, and people were taking their business to places beyond Main Street. Visit Littleton today though, and see what energized citizens can do to bring a New England downtown back to life. With help from the innovative "Main Streets Program," sponsored by the National Trust for Historic Preservation, the town spruced up the street-scape, restored historic buildings, rejuvenated businesses, and built affordable housing. Main Street is, once again, a draw. A combination of personalities, resources, and well-thought-out strategies has made Littleton the poster child for the "can do" spirit and new economy of northern New England.

*Main ideas and themes:* Downtown as the heart of a community; the establishment of a diversified economy; urban renewal and revitalization.

*Vocabulary:*

Big box retail

Downtown

Greenhouse gas

Main Streets Program

*Class discussion:*

Questions to ask before viewing:

Does your community have a downtown? If so, what is there to do downtown? Is there a Main Street? Where do you shop with your family for food? For clothes?

What is your favorite store?

Questions to ask after viewing:

If you were buying a guitar, would you go to a big store like Wal-Mart, or a small store like the music shop in the video? Are there any specialty stores (such as the guitar store or the candy counter) that you wish your community had? When a big store or factory shuts down, such as the shoe factories of Littleton, what can the town do? Littleton welcomed the "Big Box" chain stores, yet the owner of the store with the candy counter is worried that the bigger stores are threatening her business. Do you think Littleton's downtown businesses will last? Is a downtown just a collection of stores, or something more? What kind of activities and spaces attract people to a downtown area?

*Activity:* The Places We Shop

Students will keep a log of all shopping in their family over the course of a week. This data will be compiled in class, and students will put together charts and graphs to represent the data.

Materials

1. VCR, TV, videotape of Livable Landscapes Project
2. Computers with internet access
3. Library access
4. Clipboards (one per student)
5. Activity Sheet 2: Shopping Log (one per student)

What to Do

1. In this activity students will be keeping a log of all shopping trips made by members of their family for one week. Hand out one "Shopping Log" and one clipboard to each student. Tell the students that Part 1 of the Activity Sheet is where they will record the details of every shopping trip.
2. Students will work with parents and other family members to gather shopping information for log.
3. At the end of the week of data collection, students will answer questions in Part 2 of Activity Sheet 2.
4. Compile on the chalkboard the data students collected, separating shopping at nationally or internationally owned stores from shopping at locally owned stores. Calculate the average number of trips to all of the stores, the average distance to each store per trip, and the percentage of trips to locally owned stores.
5. According to the National Trust for Historic Preservation, for every dollar spent in an independent, locally owned store, 60 cents stays in the local economy. For every dollar spent at a chain store, only 20 cents remain in the local economy ([http://www.cdexchange.org/stories/storyReader\\$80](http://www.cdexchange.org/stories/storyReader$80)). Have students calculate how much of their money stayed in the local economy based on their week's worth of data. Have students calculate how much money would have remained in the community if all of their shopping took place at locally owned stores. Do the same calculations for the class totals. To calculate annual costs to the local economy, multiply the figures by 52 weeks/year.
6. The United States Environmental Protection Agency estimates that for each mile driven, an average passenger car emits 0.916 pounds of carbon dioxide (<http://www.epa.gov/otaq/consumer/f00013.pdf>). Carbon dioxide is a greenhouse gas that plays an important role in regulating the Earth's climate. The rapidly

- increasing concentration of greenhouse gases in Earth's atmosphere threatens to increase global temperatures and drastically alter our planet's climate. Have students compute how much their shopping trips contribute to the amount of carbon dioxide emitted into the atmosphere. Have the students complete the same calculations for the class totals. To calculate annual carbon dioxide emissions, multiply these weekly figures by 52 weeks/year.
7. To find out how much shopping trips cost their family in fuel expenses, have each student go to the website <[www.fueleconomy.gov](http://www.fueleconomy.gov)> to find out the miles per gallon the family car averages (they will need to know the make, model and year of the car). Use the figure for city driving, which should be around 20 miles per gallon (MPG). Your students will also need to take note of gas prices at a local gas station for unleaded fuel. Now have them calculate weekly fuel costs by dividing the miles traveled by the MPG, and multiplying by the price of gas. To calculate annual fuel costs for shopping trips, have them multiply the weekly expenses by 52 weeks/year.
  8. Discuss with students how their shopping patterns could be changed to decrease their impact on the local economy, family expenses and the global environment. Encourage them to share their findings with their parents.

*Extension 1: Down or Out of Town?*

Divide the class into four teams of students. Two teams will be assigned to collect data downtown, while the other two teams will collect data from outlying shopping centers. (If no clear downtown area exists in your community, have students collect data at a well-established, locally owned store.) Each team will spend an hour counting the number of people that enter the store (to ensure that numbers are comparable, have each team conduct their observations at the same time of day on the same day of the week). Students should interview some shoppers to find out why they are shopping there. In class, the data and interview responses can be compared.

*Extension 2: The Character of the Community*

In the video, the character of Pollyanna captures the identity of Littleton. Have the students choose a character that they believe accurately represents their community. The character may be a fictional or historical person, an animal, a current political leader, a local musician, and so on. Students will then design a statue, monument or mural to celebrate this character in their community.

*Resources:*

Books

[Affluenza: The All-Consuming Epidemic](#)

John De Graaf, David Wann, Thomas H. Naylor  
Berrett-Koehler, 2002

[Slam-Dunking Wal-Mart](#)

Al Norman  
Raphael Marketing, 1999

[Up Against the Wal-Marts: How Your Business Can Prosper in the Shadow of the Retail Giants](#)

Don Taylor and Jeanne Smalling Archer

AMACOM, 1996

*Websites*

Boulder Independent Business Alliance

<http://www.boulder-iba.org/>

"Fuel Economy," US Department of Energy and US Environmental Protection Agency

<http://www.fueleconomy.gov/>

The Institute for Local Self-Reliance

<http://www.ilsr.org/>

"National Main Street Center," National Trust for Historic Preservation

<http://www.mainst.org/>

Reclaim Democracy

<http://reclaimdemocracy.org/>

"Sprawl-Busters: An International Clearinghouse on Big-Bro Anti-Sprawl Information"

<http://www.sprawl-busters.com/>

*Activity sheets:* Activity Sheet 2

## Unit 5: To Build or Not to Build

*At a glance:* In every community, people are faced with new developments that may conflict with environmental integrity and community values. By exploring the controversy over the construction of the "Circ" in Burlington, Vermont, students will be introduced to the economic tool of cost-benefit analysis. Students will identify the pros and cons of a hypothetical development in their community, and brainstorm alternatives. Extensions involve a class role-playing session and an analysis of family commuting patterns.

*Subjects covered:* social studies, economics, transportation and planning

*Grade level:* 7–12

*Time requirements:* 3 50-minute classes

*Standards:* See appendix

*Learning objectives:*

Students will:

Investigate the connection between transportation systems and development.

Evaluate new developments using cost-benefit analysis.

Develop alternatives to conventional development patterns.

Analyze the transportation patterns of themselves and their families.

*Documentary segment:*

*Program summary:* When a once-rural area is bombarded by rapid development, growing pains are inevitable; no example better reflects the struggle for sustainable landscape change than the drama around Vermont's "Circ". The Circumferential Highway is a planned 16-mile, four-lane beltway intended to ease traffic congestion around Burlington and in Essex Junction near Vermont's major employer, IBM. The Circ issue is a microcosm of every sprawl story in northern New England: Circ proponents cite the benefits of relieving traffic congestion and promoting economic expansion. The anti-Circ faction fears the extensive environmental problems the highway will cause, including loss of green space and farmland, an increase in water pollution to nearby Lake Champlain, the elimination of irreplaceable sandplain habitat, and harm to over 40 acres of wetland, to say nothing of the impacts on communities from the Circ-based sprawl. The Circ story offers a perfect window into the wrenching issues surrounding northern New England landscape change.

*Main ideas and themes:* Connection between roads and development; tension between economic development and community change.

*Vocabulary:*

Cost-benefit analysis

Externality

*Class Discussion:*

Questions to ask before viewing:

How do you get to school? How far is your home from school? How do you parents get to work? How far is your home from where they work? How long does your parents' commute take? Has their amount of time spent commuting changed over the years? Does your family own a car? How many cars? How would not having a car affect your life? Could your community be redesigned so that you didn't need a car?

Questions to ask after viewing:

In the video the area's increasingly heavy traffic is cited as a major reason for building the Circ. Do you think heavy traffic, and subsequent reduction in traffic congestion is a good reason to build the Circ? Will the new road solve the congestion problem? Have any new roads been built in your community recently? If so, how did they change the area? Do you think the Circ needs to be built? One of the interview subjects in the video made a distinction between jobs and livelihood ("Livelihood is something that sustains us, that give us meaning for creating our lives, and jobs are about making money"). Do you agree with this distinction? What job do you picture yourself working at in 15 years? What sustains you or gives your life meaning?

#### *Activity:* Pros and Cons

Most students have already completed a simple cost-benefit analysis, weighing the pros and cons of a certain purchase or activity. In this activity they will use the same procedure to evaluate the construction of a new highway next to school grounds. Students will develop transportation alternatives, and rank them according to feasibility and effectiveness.

#### Materials

1. VCR, TV, videotape of Livable Landscapes Project
2. Computers with internet access
3. Library access
4. Large note cards (approximately 20), thumbtacks, and a bulletin board

#### What to Do

1. In the video, one interview subject mentions getting involved with the Circ highway debate when the proposed road threatened land next to the local high school. Tell your students that they will be brainstorming about the costs and benefits of the following hypothetical development: IBM is fed up with the uncertainty of the Circ construction, and leaves Burlington to move to your town, with plans to locate their headquarters less than a mile from your school. To encourage IBM to relocate, your town council promises to build a four-lane highway, connecting the IBM office to the nearest interstate highway. The proposed route for this road passes right next to your school.
2. Have the class brainstorm about some pros, or benefits, of IBM moving to town and the road construction. (It may be helpful for students to think of benefits mentioned in the video.) Record this list of benefits on the chalkboard. Have the class brainstorm some cons, or costs, of the new development. Make a list of these next to the pros.
3. Ask the students if all of these factors are taken into consideration when calculating the price of the construction. Introduce the economic concept of an externality—a side effect that is not considered in the price of a good or service. Externalities can be both positive (like the list of pros) and negative (like the list of cons). Often, when the all the negative externalities are included in the cost of a development, it is much more expensive than it initially appeared. Have the students compare the pros and the cons, and decide if the development is worth it.



4. Ask the class to think of creative alternatives. Assume that IBM still wants to move to your town, but is flexible regarding the site of the facility as well as transportation options for workers. Have students look at the zoning and land use maps from Unit 2, and discuss the ideal site for the IBM facility.
5. Have the students think of other ways for people to get to work. Encourage them to be innovative and to try to think up every possible idea, no matter how expensive or unusual. Write each alternative on a large note card. On a bulletin board, set up a positive x-y axis (an arrow up and an arrow to the right, that both start from the bottom left corner of the bulletin board). Label the x-axis (right arrow) as "effectiveness," and the y-axis (up arrow) as "feasibility."
6. With the class, rate each transportation alternative, on a scale of one to ten, according to effectiveness: Does it solve the transportation problem? Does it avoid the costs of the highway? Does it still have the same benefits? Move the note card along the x-axis proportionally to its rating. Then have the students rate feasibility: How expensive is the option? How much infrastructure does it require? How much will people have to change their behavior to make it work? Move the note card up the y-axis according to its rating, and use a thumbtack or piece of masking tape to hold it in place. Repeat this process for each option.
7. After all of the transportation alternatives have been rated, compare the different options. Do students agree with the relative ratings? Let students debate the ratings, and move the cards if consensus can be achieved. Talk about the ratings and try and figure out which option is best. Ideally there will be one option that is both highly effective and highly feasible; however, this is not always the case. Highly effective solutions that are not very feasible may be worth the long-term investment. Highly feasible options that are not very effective may be easy things to do in the short term while a better and more appropriate long-term solution is developed. Based on their cost-benefit analysis, have the students vote on what they think would be the best solution.

#### *Extension 1: Role Call*

To supplement the "Pros and Cons" activity (or as a substitute for the first three steps), have students participate in a role-playing activity. Propose the same hypothetical situation, but have students debate the different sides of the issue. Divide the class into the following five teams: IBM executives, the town council, your school's parent-teacher association, local environmental activists, and young computer programmers in search of employment. Each group should prepare a 5-minute presentation based on its perspective on the issue. The IBM executives are promising jobs and economic growth in return for local support and infrastructure. The town council is trying to strengthen the community, and sees new jobs as a potential way of doing this; however, the council is receptive to the demands of concerned citizens. The parent-teacher association has health and safety concerns about a busy road being built next to a school. Local environmental activists fear that the road will threaten local wildlife and destroy important wetlands. The young computer programmers are looking for jobs, and are happy that IBM is moving to town; however, they are also well-educated and environmentally aware, recognizing the importance of looking for alternatives to the road. Have the teams research local environmental and economic issues to strengthen their presentations. Encourage the students to creatively portray their different roles, having them make signs, dress up or use prop to make their characterizations more

convincing. After each team's 5-minute presentation, allow other groups to ask questions. After all five groups have presented, have a class-wide debate.

#### *Extension 2: The Daily Commute*

In the "To Build or Not to Build" class discussion questions, students discussed their daily trips to school and their parents' commutes to work. Using the map of your community developed in Unit 2, have the students illustrate the routes to school and work for their family using yarn. Have each student string a piece of yarn along his or her route to school, attaching it to the map with pins or glue. (Use different colors of yarn to indicate students who ride to school in cars, ride the bus, and walk or bike.) Using an additional color of yarn, have the students trace out the route their parents take to work. Do any routes overlap? Could some students carpool with each other to school, or could some of the parents carpool to work? Are there any public transportation options or school buses along the routes? Are any of the routes short enough to walk? Are there reasons students are unable to walk, such as busy roads or no sidewalk? In addition, if students get a ride to school in a car, have them measure the distance traveled to school and back home (either using the car odometer, or measuring the distance on the map). If their parents drive to work, have the students measure the distance that their parents traveled to work and back home. Have students calculate the combined weekly mileage of their family's trips to school and work. Use this figure to calculate the weekly carbon dioxide emissions and fuel expenses (steps 6 and 7 in Unit 4). Calculate annual carbon dioxide emissions and fuel expenses by multiplying the figures by 52 weeks/year. Add the results to the figures from Unit 4 to calculate expenses and emissions for both shopping trips and daily commutes. Have the students share their findings with their parents, particularly focusing on annual expenses and carpooling options.

#### *Resources:*

##### *Books*

Above and Beyond: Visualizing change in small towns and rural areas  
Julie Campoli, Elizabeth Humstone and Alex MacLean  
Planners Press, American Planning Association, 2002

Asphalt Nation: How the Automobile Took Over America, and How We Can Take It Back  
Jane Holtz Kay  
University of California Press, 1998

The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape  
James Howard Kunstler  
Touchstone Books, 1994

##### *Websites*

Carpool Connect  
<http://www.carpoolconnect.com/>

"The Changing Face of Transportation," US Department of Transportation  
<http://199.79.179.77/transtu/cft/>

"Community Solutions Project," Institute for Civil Infrastructure Systems, NYU  
<http://www.nyu.edu/icis/comm/comm.html>

Surface Transportation Policy Project  
<http://www.transact.org/>

"Transportation Alternatives: The advocates for cycling, walking and environmentally sensible transportation"  
<http://www.transalt.org/>

*Activity sheets:* None

## Unit 6: Smart Growth is Better than Dumb Growth

*At a glance:* Scarborough, Maine's Dunstan Village is a new type of environmentally and socially responsible development, an example of smart growth. This activity's discussion of smart growth builds on all of the previous activities students have undertaken: an analysis of a community history, an assessment of community assets and behavior patterns, and a detailed cost-benefit analysis of new development. Drawing from the previous lessons, students will design their ideal community and create a set of guidelines for development. Extensions involve three-dimensional modeling and creating a composite map of their combined visions.

*Subjects covered:* social studies, geography, planning and design

*Grade level:* 7–12

*Time requirements:* 3 50-minute classes with additional time for student research

*Standards:* See appendix

*Learning objectives:*

Students will:

- Articulate their community's needs, including a special focus on the needs of underrepresented groups.
- Develop a vision for the future of their community.
- Generalize development guidelines based on their community visions.
- Work together to combine their respective visions into a unified plan.

*Documentary segment:*

*Program summary:* How did Route 1 become the nightmare that it is in so many communities? How has it robbed communities along its path of their downtowns, often splitting them through the center? The program weaves the story of Route 1 as an emblem of community disintegration and a launching pad for re-building. We'll explore the evolution of the corridor from a path for Native Americans, to a meandering cart path for settlers, to an escape route for urban dwellers to the fantasy frontier of the north woods. Through the lens of Route 1's history, we will trace the ways in which the automobile has changed the landscape and the communities along its path. Finally, we explore the development of a new type of smart community, the Dunstan Village in Scarborough, Maine. Can this smart growth replace Route 1's sprawl by balancing development and community?

*Main ideas and themes:* The impact of the automobile on development patterns; what makes a livable community and a livable landscape; smart growth strategies and human-scaled development.

*Vocabulary:*

- Design charette
- Great American Neighborhood
- New Urbanism
- Smart Growth
- Vision

*Class Discussion:*

Questions to ask before viewing:

Do you think your community was designed with teenagers in mind? Are there spaces for teenagers to hang out? Is it easy for teenagers to get around? Do you think teenagers could help design a better community? Are there any other groups whose needs have been neglected by your community's design? Think about the elderly, developmentally and physically challenged, minority groups, people who don't have cars, and so on.

Questions to ask after viewing:

What makes Dunston Village different from the average neighborhood? How have community members been involved in the design? Do you think involving the community will result in a better-designed neighborhood? Why don't developers often involve community groups?

*Activity:* In the Year 2050

Having thought about community assets, transportation infrastructure and resident behavior in the previous sections, students will now design the community of tomorrow. Considering their unique needs as teenagers, the neglected needs of other members of the community, and examples of smart growth in the video, students will map out a preferred future.

Materials

1. VCR, TV, videotape of Livable Landscapes Project
2. Computers with internet access
3. Library access
4. 11" x 17" pieces of paper (one per student)
5. Colored pencils and drawing materials

What to Do

1. Review with students the issues covered in previous units: the history of your community, zoning policies and development patterns, natural and social assets, shopping behavior and transportation patterns. Tell your students their assignment is to develop a design for a better community. Each student will come up with a vision for the community in the year 2050. Let them know that they have the power to reverse current trends—they can redefine zoning laws, rebuild urban areas and even invent new technologies.
2. Hand out the 11" x 17" pieces of paper. Have the students copy the current community map from Unit 2 in light pencil. This will be their starting point for the 2050 community illustration. (The map need not be perfectly to scale, but it should illustrate the general layout of the community.)
3. Using the growth rate calculated in Step 8 of Unit 2, have your students compute the population of your community in 2050. They should use this figure to determine how much new construction must take place. It is up to them to decide what would be best for the community: new apartment buildings downtown, new subdivisions on the edge of town, broader highways to reduce congestion, more open space downtown, and so on.
4. Have students draw a picture of their community in 2050 (this map should capitalize on students' creativity and artistry—it need not be a traditional two-dimensional map). The drawing should visually answer the same questions investigated in Unit 1:

- In what kind of buildings do people live and work? How do they get around? Where do they shop? Who lives in the community and where did they come from? Where does the countryside begin and what did it look like? This drawing should illustrate the environmental, social and cultural aspects of their community in the future, highlighting economic and transportation issues. Emphasize that this represents a positive vision of the future, their version of smart growth as discussed in the video.
5. Have your students present their future visions to the class. During the presentations, note on the board some of the common elements that students described in their various visions. After the presentations, use the common elements to lead a discussion on the similarities of their visions. Ask the students what ideas motivated their common elements, and see if they can generalize guidelines from these motivations. Develop a set of ten guidelines that could be used by community planners and local developers.

#### *Extension 1: 3-D Visions*

Based on the drawing created in the "In the Year 2050" activity, have your students create three-dimensional models of their vision for your community's future. Have them use a variety of materials to create their model (Legos, clay, cardboard, and scrap wood are just a few ideas). Again, this is an ideal creative outlet and there is plenty of room for expression. In fact, you may want to talk to your school's art teacher to see if the activity may be pursued in partnership with art classes. However, it is important that students make sure the model is grounded in their opinion about what the ideal community of the future would be like. Another option is to have the class develop virtual three-dimensional models of the future. The computer game SimCity allows students to play the role of Major and City Planner for a hypothetical community. Students design the layout, build infrastructure, and set local policies, such as taxation and zoning. The classic version of the program is available free on-line at <[www.simcity.com](http://www.simcity.com)> (you must register to use the site using a valid e-mail address). Students should then display these class visions in an area of the school where other students, teachers, administrators, and parents have the opportunity to view them.

#### *Extension 2: Classroom Vision*

Your students have all independently come up with visions for your community's future. Now they will have the opportunity to see if they can agree on a common vision. Using another 4' x 5' sheet of paper, make a scale copy of the map developed in Unit 2. Using the common elements and guidelines from Step 5 in the "In the Year 2050" activity, have your students debate and discuss a common vision. Architects and planners call this process a "design charette." As consensus is achieved over certain developments, add these items to the map. Students will have to negotiate and compromise to create an acceptable vision for the entire class. (Note: This process could get a little unwieldy for large classes. You may want to divide the class into groups, like in Unit 2, and have each group coordinate their visions to create a section of the map. Another option would be to use a two-step process: Create four or five groups in which the students create ideal community visions. The four or five groups should then present their idea to the larger group, and then the class can work to combine these visions into a single, unified vision.)

*Resources:*

Books

Community by Design: New Urbanism for Suburbs and Small Communities

Kenneth B. Hall and Gerald A. Porterfield

McGraw-Hill Professional Publishing, 2001

Community Rules: A New England Guide to Smart Growth Strategies

Conservation Law Foundation and Vermont Forum on Sprawl, 2002

Smart Growth Manual

Andres Duany, Jeff Speck and Elizabeth Plater-Zyberk

McGraw-Hill Professional Publishing, 2002

Websites

"Antioch New England Institute: Promoting a vibrant and sustainable environment, economy, and society through informed civic engagement"

<http://www.anci.org/>

Center for Neighborhood Technology

<http://www.cnt.org/>

"Community Visioning and Implementation," Sustainable Communities Network

<http://www.sustainable.org/creating/vision.html>

Congress for the New Urbanism

<http://www.cnu.org/>

Smart Growth America

<http://www.smartgrowthamerica.com/>

Smart Growth Online

<http://www.smartgrowth.org/>

*Activity sheets:* None

## Unit 7: Now Go Do It!

*At a glance:* In the final unit of this curriculum, students build the skills required to become community activists. Based on the results of the previous lessons, students have the information and vision required to influence future development patterns in their community. This lesson includes a series of actions students can take to become more engaged in their community. Students are encouraged to develop their own campaigns and organizations to protect and improve their community's landscape.

*Subjects covered:* government, civics, citizenship, and ethics

*Grade level:* 7–12

*Time requirements:* 1 50-minute class session, and a lifetime of active citizenship

*Standards:* See appendix

*Documentary segment:*

*Program summary:* To conclude the documentary, a number of the scholars and activists summarize the problem of sprawl in New England. Clarifying what is at stake, and how much time we have before the landscape is irreversibly altered, the experts call for individual and collective action. Ultimately, the changing landscape comes down to values, as we must find ways to creatively balance community and capitalism with development and environment.

*Main ideas and themes:* Human decisions shape the landscape; values shape human decisions; if we value community and environment, we must actively work to protect them.

*Learning objectives:*

Students will:

Learn more about decision-making and policy-making bodies in the local community.

Explore their role as active citizens.

Work to create a livable landscape in their community.

*Vocabulary:*

Citizen action

Livable landscape

Values

*Class Discussion:*

Questions to ask before viewing:

Do you think it is your responsibility, as a young community member, to protect and improve the local landscape? Is it the responsibility of adults? Is it the responsibility of the government? Who will actually do the work? Who could best create a vision for the future?

Questions to ask after viewing:

What is a value? What do you value in your community? What values drive current development in your community? What values do you think should drive future developments? If you only had 20 years to act, what could you do to protect and improve the landscape today? In five years? In ten years? Who makes the planning decisions in your community? How can you influence their decision-making?



### *Activity:* Citizen Action Checklist

The list below is not a sequential list of steps for a typical activity. Rather, this is a list of ten actions that students and teachers can take in their local community.

#### Materials

1. VCR, TV, videotape of Livable Landscapes Project
2. A vision for your community (developed in the previous units)
3. The motivation to see your vision through to a reality

#### Potential Actions for Students

1. Write a letter to the mayor of your town or city. In this letter, clearly describe any problems you have observed in your community and outline potential improvements. If you disagree with any recent actions by the mayor, be sure to discuss your concerns regarding this policy.
2. Write a letter to the editor of your local newspaper. Clearly describe any problems you have observed in your community and outline potential improvements. If you disagree with any recent articles or opinions expressed in the paper, be sure to clearly cite the item and describe your concerns with it.
3. Attend a meeting of your local town council or planning board. Find out which issues will be discussed at the meeting, and research those issues before attending. If the meeting is open for public comment, write up a short statement that you could read aloud at the meeting.
4. Perform an informal door-to-door survey in your neighborhood to get a better idea of what may be some local needs and concerns. If many people you survey echo a similar concern, investigate this issue further. Contact organizations and individuals that may be able to actively deal with the issue and make recommendations for what actions that organization could take to address the concerns that were voiced during your survey.
5. Volunteer at a local community-based nonprofit organization to learn more about that organization's issue of interest or concerns with the community. You may want to check for volunteer positions at a local historical preservation society, open-space protection coalition, or social welfare agency.
6. Create an eye-catching public awareness campaign to promote positive community behaviors that help to protect and enhance the local landscape. This awareness campaign may involve designing posters and pamphlets, holding a rally to protect a local and threatened landscape or monument, and so on.
7. Clean up a park in your community.
8. Lead a community visioning session for your parents and other adults in the community (using the previous units as a guide).
9. Design and carry out a community betterment program. For example, you could work with local artists to create a public mural, or local businesses to improve a public space.
10. When you have the opportunity, make your voice heard in your community. When you turn 18, carefully choose the candidates you vote for based on your concerns and values. Attend community meetings. Discuss your ideas with others. Become an involved community member, ensuring that your future vision is realized!

*Resources:*

Websites

"Turn the Tide: 9 Actions for the Planet," Center for a New American Dream

<http://www.newdream.org/turnthetide/>

## **Glossary**

Big box retail	Large chain stores, such as Home Depot and Wal-Mart, are often referred to as "Big Boxes."
Build-out analysis	A tool used by planners to project the hypothetical maximum level of development allowed by zoning regulation.
Citizen action	Taking actions in a community, based on your rights and responsibilities as a member of that community.
Cluster development	A pattern of development in which open space is preserved by encouraging dense clusters of homes or other buildings.
Community	A group of individuals bound together by common geography, history, culture, environment and interests.
Community supported agriculture (CSA)	System in which, for an annual fee, farmers provide periodic supplies of locally produced food for families and individuals.
Composting	Process in which organic matter, such as leaves or vegetables, is converted into fertilizer.
Conservation easement	A legal document that maintains private ownership of a piece of land, while preventing certain kinds of future development.
Cost-benefit analysis	An economic tool that is utilized to analyze the pros and cons of a given decision or action.
Design charette	An exercise used by architects and planners to forge consensus among local stakeholders about a building project or community plan.
Downtown	In the traditional village pattern of settlement, the center of activity and commerce.
Externality	An economic cost or benefit that is not considered when the price of a good or service is set.
Great American Neighborhood	A pedestrian-oriented, human-scale neighborhood where people live, shop, recreate and interact. The ideal of positive community that drives many forms of Smart Growth.

Greenhouse gas	Gases, such as carbon dioxide, methane, nitrous oxide, and most man-made gases, that help regulate Earth's temperature through a process called the <i>greenhouse effect</i> .
Landscape	The environmental, social and cultural characteristics of a place.
Livable landscape	A landscape shaped by the collective vision of a community and which is sustainable environmentally, economically and socially.
Main Streets Program	A program of commercial revitalization through the preservation and redevelopment of historic architecture, initiated by the National Trust for Historic Preservation < <a href="http://www.mainst.org/">http://www.mainst.org/</a> >.
Markets	The place where a good is sold, either physically, regionally or demographically.
New Urbanism	An urban design movement that supports walkable, multi-use neighborhoods, preservation of open space and appropriate architecture.
Open space	Land that remains undeveloped for farming, forests, wildlife or recreation due to conservation status or a lack of development pressure.
Oral history	The collection of personal narratives, memories and stories.
Organic farming	Agriculture in which the use of synthetic pesticides and fertilizers is replaced with non-chemical methods such as composted manure, crop rotation and use of beneficial plants and insects.
Pesticides	Chemicals used in agriculture to kill insects.
Primary sources	Original sources of research material, such as personal writings and interviews.
Secondary sources	Published sources of research material, such as books or articles.
Smart Growth	A new philosophy of development in which growth is driven and controlled by community needs.

Sprawl	A low density pattern of development, driven by an automobile-oriented society, which consumes open peripheral spaces while traditional service centers lose their vitality.
Value	A principle or quality that is considered worthwhile.
Vision	Intelligent foresight.
Working landscapes	A landscape shaped by sustainable use of natural resources.
Zoning	The local policies that regulate land use and new developments.

## Resources

### *Documentaries:*

#### Affluenza

<http://www.pbs.org/kcts/affluenza/>

PBS documentary that explores the high social and environmental costs of materialism and overconsumption. Viewing and teaching guides available on-line.

#### Change and Challenge: Vermonters at Work

<http://www.orton.org/projects/changeAndChallenge.htm>

Orton Family Foundation documentary project. Site mentions teacher's guide, but it is not on-line.

#### Paving the American Dream: Southern Cities, Shores and Sprawl

<http://www.uncwil.edu/smartgrowth/>

On-line educator's resource guide for UNC Wilmington documentary. Includes clips and lots of activities.

#### Save Our Land, Save Our Towns

<http://www.saveourlandsaveourtowns.org/>

Documentary, book and teacher's guide on sprawl in Pennsylvania, by Pulitzer Prize winning author Tom Hylton. 78-page guide has extensive background material.

#### Sprawl: The American Landscape in Transition

<http://americanart.si.edu/helios/newmedia/lichty/>

Multimedia installation on sprawl in Ohio - an unconventional web-based documentary that includes navigable panoramic pictures and interview clips. Smithsonian American Art Museum hosts site, which won New Media/New Century award.

#### The Sprawling of America: Inner City Blues

<http://www.gltv.org/>

Great Lakes Television's website on Detroit documentary. Lots of info on site, including bibliography, interview clips and transcripts and the entire documentary.

#### Store Wars: When Wal-Mart Comes to Town

<http://www.pbs.org/storewars/index.html>

ITVS/PBS documentary on the battle over a new Wal-Mart in a small Virginia town. Lots of background material on the site, and a section for teachers with three lesson plans. Also, good list of websites and other resources.

#### Subdivide and Conquer: A Modern Western

<http://www.subdividefilm.com/>

Site for documentary on western sprawl has "In the classroom" page that includes a number of classroom activities for grades 6-12.

#### Urban Sprawl

<http://www.wksu.org/news/stories/sprawl/sprawl.html>

A 5-part radio documentary for WKSU Public Radio Kent, Ohio.

#### *Education Programs:*

Center for Understanding the Built Environment

<http://www.cubekc.org/>

Produces a variety of educational materials, including: Box City, Picture This!, Community Connections, and Walk Around the Block.

Exploring and Sustaining Our Communities, World Wildlife Fund

<http://www.worldwildlife.org/>

Community-based curriculum by leader in environmental conservation and education, currently under development.

KIDS (Kids Involved Doing Service) Consortium, "KIDS as Planners"

<http://www.kidsconsortium.org/>

Comprehensive guidebook on integrating community service and education by a leader in the service-learning movement.

National 4H Council, "Going Places, making Choices"

<http://www.4hgpmc.com/>

High School curriculum on transportation and the environment. Activities, handouts and background material all available on-line.

Project Learning Tree, "The Places We Live"

<http://www.plt.org/curriculum/places.cfm>

New place-based environmental education module by PLT - still under development.

#### *Organizations*

American Planning Association

<http://www.planning.org/>

A nonprofit public interest and research organization committed to urban, suburban, regional, and rural planning.

Antioch New England Institute

<http://www.anci.org/>

Nonprofit offshoot of Antioch New England Graduate School, which promotes a vibrant and sustainable environment, economy, and society through informed civic engagement.

Boulder Independent Business Alliance

<http://www.boulder-iba.org/>

Nonprofit established to strengthen and support locally owned independent businesses in Boulder, Colorado

Center for Neighborhood Technology

<http://www.cnt.org/>

Site for Chicago-based non-profit that focuses on sustainable urban development. Includes speech “Planning As If People and Places Matter: Surface Transportation Research Needs and Performance for the Next Century”

Congress for the New Urbanism

<http://www.cnu.org/>

San Francisco based nonprofit working to promote coherent regional planning, walkable neighborhoods, and attractive, accommodating civic spaces.

Conservation Law Foundation

<http://www.clf.org/advocacy/communities.htm>

Page for Communities Project includes campaign objectives and reports.

The Dunn Foundation

<http://www.dunnfoundation.org/>

Nonprofit organization working to help communities maintain their cultural, historical and visual character through education, community-based action and philanthropy.

Green Space Design

<http://www.greenspacedesign.org/>

Organization committed to providing an open forum for the discussion of open space preservation issues.

The Institute for Local Self-Reliance

<http://www.ilsr.org/>

Nonprofit research and educational organization that provides technical assistance and information on environmentally sound economic development strategies.

Maine State Planning Office

<http://www.state.me.us/spo/>

State planning agency that has done extensive research on the cost of sprawl and value of smart growth.

National Trust for Historic Preservation

<http://www.nthp.org>

50+ year old non-profit that seeks to save historic places and build better communities.

Organic Trade Association

<http://www.ota.com/>

Membership based business association representing the organic industry in Canada, the United States and Mexico.

Orton Family Foundation

<http://www.orton.org/>

Nonprofit foundation that assists rural communities as they deal with rapid social, economic and environmental change.

Partners for Livable Communities



<http://www.livable.com/>

Nonprofit committed to improving community well-being through economic development, social equity, amenity assets and quality of life.

Reclaim Democracy

<http://reclaimdemocracy.org/>

Organization dedicated to reviving grassroots democracy and restoring democratic authority over corporations.

Scenic America

<http://www.scenic.org/>

Non-profit with the motto, "Change is inevitable, ugliness is not." Runs endangered landscapes competition.

Smart Growth America

<http://www.smartgrowthamerica.com/>

Nationwide coalition promoting a better way to grow: one that protects farmland and open space, revitalizes neighborhoods, keeps housing affordable, and provides more transportation choices.

Smart Growth in Maryland

<http://www.op.state.md.us/smartgrowth/>

Progressive smart growth program at state level. Resources page has great list of sprawl related websites.

Smart Growth Online

<http://www.smartgrowth.org/>

On-line clearinghouse for smart growth information, hosted by the Smart Growth Network, a partnership between the EPA and a number of nonprofits.

Sprawl-Busters

<http://www.sprawl-busters.com/>

Anti-sprawl organization led by Al Norman, "the guru of the anti-Wal-Mart movement," according to *60 Minutes*.

Sprawl Watch Clearinghouse

<http://www.sprawlwatch.org/>

Great information resource on sprawl and growth with daily updates.

Surface Transportation Policy Project

<http://www.transact.org/>

Non-profit in support of a diversified transportation system - great reports of household costs of sprawl and auto-oriented infrastructure.

Transportation Alternatives

<http://www.transalt.org/>

Advocates for cycling, walking and environmentally sensible transportation.

Vermont Forum on Sprawl

<http://www.vtsprawl.org/index3.htm>

Great website for Northern New England sprawl issues.

Wisconsin Foodshed Research Project

<http://www.foodshed.wisc.edu/>

Tools and resources for activists and eaters who are changing the way we grow, process, market and eat food

#### *Additional Websites*

Carpool Connect

<http://www.carpoolconnect.com/>

"The Changing Face of Transportation," US Department of Transportation

<http://199.79.179.77/transtu/cft/>

"Community History: Better Schools Building Better Communities," Program for Rural Services and Research, University of Alabama

[http://www.pacers.org/community\\_history.htm](http://www.pacers.org/community_history.htm)

"Community History in Words and Pictures," County of Los Angeles Public Library

<http://www.colapublib.org/history/>

"Community Solutions Project," Institute for Civil Infrastructure Systems, NYU

<http://www.nyu.edu/icis/comm/comm.html>

"Community Supported Agriculture (CSA)," Alternative Farming Systems Information Center, US Department of Agriculture

<http://www.nal.usda.gov/afsic/csa/>

"Community Supported Agriculture of North America," University of Massachusetts Extension

<http://www.umass.edu/umext/csa/>

"Community Visioning and Implementation," Sustainable Communities Network

<http://www.sustainable.org/creating/vision.html>

"Cyburbia: The Urban Planning Portal," University at Buffalo, Department of Urban and Regional Planning

<http://www.cyburbia.org/index.html>

"Fuel Economy," US Department of Energy and US Environmental Protection Agency

<http://www.fueleconomy.gov/>

"How to Collect Oral Histories," Utah State University

[http://www.usu.edu/oralhist/oh\\_howto.html](http://www.usu.edu/oralhist/oh_howto.html)

"Land Use Law," Professor Daniel R. Mandelker, Washington University School of Law  
<http://www.landuselaw.edu/>

"Local Place Names Reach back into History," American Press  
<http://www.americanpress.com/features/docs/history/places.htm>

"National Main Street Center," National Trust for Historic Preservation  
<http://www.mainst.org/>

"Origins of Local Place Names," Eyewitness in Manchester UK  
<http://www.manchesteronline.co.uk/ewm/newsletter/ewm405.html>

OrganicGardening.com  
<http://www.organicgardening.com/>

"Rural Locality Names," Taminmin Community Library, Australia  
<http://www.octa4.net.au/tamlib/library/places.htm>

"Ten Reasons to Buy Local Food," Appalachian Sustainable Agriculture Project  
<http://www.asapconnections.org/local.htm>

### *Books*

Above and Beyond: Visualizing change in small towns and rural areas  
Julie Campoli, Elizabeth Humstone and Alex MacLean  
Planners Press, American Planning Association, 2002

Affluenza: The All-Consuming Epidemic  
John De Graaf, David Wann, Thomas H. Naylor  
Berrett-Koehler, 2002

Asphalt Nation: How the Automobile Took Over America, and How We Can Take It Back  
Jane Holtz Kay  
University of California Press, 1998

Bowling Alone: The Collapse and Revival of American Community  
Robert D. Putnam  
Simon and Schuster, 2000

Community by Design: New Urbanism for Suburbs and Small Communities  
Kenneth B. Hall and Gerald A. Porterfield  
McGraw-Hill Professional Publishing, 2001

Community Rules: A New England Guide to Smart Growth Strategies  
Conservation Law Foundation and Vermont Forum on Sprawl, 2002

Fast Food Nation: The Dark Side of the All-American Meal

Eric Schlosser  
HarperCollins, 2002

Gaia's Garden: A Guide to Home-Scale Permaculture  
Toby Hemenway  
Chelsea Green Pub Co., 2001

The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscape  
James Howard Kunstler  
Touchstone Books, 1994

The Great Remembering: Further thoughts on land, soul, and society  
Peter Forbes  
The Trust for Public Land, 2001

Hands on the Land: A History of the Vermont Landscape  
Jan Albers  
MIT Press and Orton Family Foundation, 2000

Local Flavors: Cooking and Eating from America's Farmers' Markets  
Deborah Madison  
Broadway Books, 2002

Our Land, Ourselves: Readings on People and Place  
Peter Forbes, Ann Armbrrecht Forbes and Helen Whybrow (editors)  
The Trust for Public Land, 1999

Silent Spring  
Rachel Carson  
Mariner Books Reprint, 1994 (1962)

Slam-Dunking Wal-Mart  
Al Norman  
Raphael Marketing, 1999

The Small Town Planning Handbook  
Thomas L. Daniels, John W. Keller and Mark B. Lapping  
Planners Press, American Planning Association, 1995

Smart Growth Manual  
Andres Duany, Jeff Speck and Elizabeth Plater-Zyberk  
McGraw-Hill Professional Publishing, 2002

Suburban Nation: The Rise of Sprawl and the Decline of the American Dream  
Andres Duany, Elizabeth Plater-Zyberk and Jeff Speck  
North Point Press, 2000

Up Against the Wal-Marts: How Your Business Can Prosper in the Shadow of the Retail Giants

Don Taylor and Jeanne Smalling Archer

AMACOM, 1996

*Articles:*

"Sprawl Is Coming: What can be done to save Maine's cities and villages"

Special Issue of Habitat: Journal of the Maine Audubon Society

Fall 1997

"Sprawl Is Us"

Vermont Magazine

Joe Sherman

March/April 2001

<http://www.vermontmagazine.com/ma01/sprawl-is-us.htm>

"Urban Sprawl: The American Dream?"

National Geographic

John G. Mitchell

July 2001

## Activity Sheet 1: Food Log

### Breakfast

Food item	Where was it purchased?	Where was it grown?

### Lunch

Food item	Where was it purchased?	Where was it grown?

### Dinner

Food item	Where was it purchased?	Where was it grown?

Note: if there is not enough space, list additional ingredients/food items on back

## Activity Sheet 2: Shopping Log

### Part 1: Shopping Data

Date	Store name	Locally owned? (yes/no)	Distance (miles roundtrip)	Amount spent (\$)

### Part 2: Summary of Data

- How many trips to the store did your family make in one week? \_\_\_\_\_
- What percentage of trips was to locally owned stores? \_\_\_\_\_%
- How much money was spent in locally owned stores? \$ \_\_\_\_\_
- How much money was spent in chain stores? \$ \_\_\_\_\_
- How many miles were traveled during shopping trips? \_\_\_\_\_miles
- What was the average distance of each trip? \_\_\_\_\_miles

## Matrix of National Standards

*Note: State standards matrices are available on our website...*

	National Geography Standards <sup>i</sup>	National Science Education Standards <sup>ii</sup>	Principles and Standards for School Mathematics <sup>iii</sup>	National Standards for History <sup>iv</sup>	Voluntary National Content Standards in Economics <sup>v</sup>	National Standards for Civics and Government <sup>vi</sup>	Standards for the English Language Arts <sup>vii</sup>
Unit 1: Reading History in the Landscape	6. How culture and experience influence perception of place 12. The process, patterns, and functions of human settlement 15. How physical systems affect human systems 17. How to apply geography to interpret the past	Science in personal and social perspectives: Population growth	Algebra: Analyze change in various contexts	1. Chronological thinking 2. Historical comprehension 3. Historical analysis and interpretation			7. Students conduct research on issues and interests by generating ideas and questions and by posing problems. They gather, evaluate, and synthesize data from a variety of sources to communicate their discoveries in ways that suit their purpose and audience
Unit 2: Where are we going?	1. How to use maps and other geographic representations 3. How to analyze spatial organization	Science in personal and social perspectives: Personal and community health	Geometry: Use visualization, spatial reasoning, and geometric modeling to solve problems Measurement: Understand measurable attributes of objects, and the units, systems, and processes of measurement	5. Historical issues-analysis and decision-making			12. Students use spoken, written and visual language to accomplish their own purposes
Unit 3: Food for Thought	4. The physical and human characteristics of places 16. The changes that occur in the meaning, use, distribution and importance of resources	Science in personal and social perspectives: Natural resources, Environmental quality	Data analysis and probability: Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.		1. Productive resources are limited 7. Markets exist when buyers and sellers interact 10. Institutions evolve in market economies to help individuals and groups accomplish their goals		



Unit 4: Defining Downtown	11. The patterns and networks of economic interdependence	Science in personal and social perspectives: Science and technology in local, national and global challenges	Data analysis and probability: Develop and evaluate inferences that are based on data		3. Different methods can be used to allocate goods and services		
Unit 5: To Build or Not to Build	14. How human actions modify the physical environment	Science in personal and social perspectives: Natural and human induced hazards, Science and technology in local, national and global challenges	Problem solving: Apply and adapt a variety of appropriate strategies to solve problems		2. Effective decision making requires comparing additional costs of alternatives with the additional benefits		
Unit 6: Smart Growth is Better than Dumb Growth	18. To apply geography to interpret the present and plan for the future	Science and technology: Abilities of technological design	Representation: Use representations to model and interpret physical, social, and mathematical phenomena	5. Historical issues-analysis and decision-making			4. Students adjust their use of spoken, written, and visual language to communicate effectively with a variety of audiences for different purposes
Unit 7: Now Do It!						I. What are Civic Life, Politics and Government? IV. What are the Roles of the Citizen in American Democracy?	6. Students apply knowledge of language structure, language conventions, media techniques, figurative language, and genre to create, critique, and discuss print and non-print

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<sup>i</sup> National Geography Standards, National Council for Geographic Education, <http://www.ncge.org/publications/tutorial/standards/>

<sup>ii</sup> National Science Education Standards (Content Standards, Grades 9-12), National Research Council, National Academy of Sciences, <http://www.nap.edu/books/0309053269/html/index.html>

<sup>iii</sup> Principles and Standards for School Mathematics (Standards for Grades 9-12), National Council of Teachers of Mathematics, <http://standards.nctm.org/>

<sup>iv</sup> National Standards for History (Historical Thinking Standards Grades 5-12), National Center for History in the Schools, <http://www.sscnet.ucla.edu/nchs/standards/>

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<sup>v</sup> Voluntary National Content Standards in Economics, National Council on Economic Education,  
<http://www.economicsamerica.org/standards/>

<sup>vi</sup> National Standards for Civics and Government (9-12 Standards), Center for Civic Education,  
<http://www.civiced.org/stds.html>

<sup>vii</sup> Standards for the English Language Arts, International Reading Association and the National Council of Teachers of English, <http://www.ncte.org/standards/>